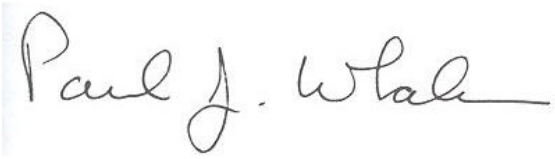
FOREWORD

While restoration of the Everglades involves several individual programs with various objectives, the Everglades Forever Act (373.4592, Florida Statutes) recognizes one of the cornerstones to improvement in the long-term ecological health of the Everglades is dependent on a strong and effective best management practices implementation program.

The purpose of this report is to provide a status report and verification of the on-going implementation of the Everglades Best Management Practices Program for the Everglades Agricultural Area as defined by Chapter 40E-63, Florida Administrative Code. Several constructive comments were received on the content and presentation of information in previous year's report. This report has incorporated all of the suggestions received and it is believed that the information in this report is presented in a clear and balanced manner.

This report provides a status update covering the period of May 1, 1997 through April 30, 1998 or Water Years 1998 (WY98).



Paul J. Whalen
Director – Everglades Regulation Division
Regulation Department
South Florida Water Management District

December 23, 1998

EXECUTIVE SUMMARY

The Everglades Best Management Practices (BMP) Program, mandated by State of Florida legislation, is one aspect of the South Florida Water Management District's Everglades Restoration Program. The goal of the BMP Program is a 25% annual total phosphorus reduction from the Everglades Agricultural Area as compared to a base period, October 1, 1978 – September 30, 1988 (pre-BMP implementation in the EAA). This report provides updated calculations for Water Year 1998 (May 1997 - April 1998).

The Everglades Forever Act specifically mandates a method to measure and calculate the annual EAA export of phosphorus in surface water runoff from the EAA lands (farms, cities, and industry). The methodology was developed during the 1991-1992 rulemaking effort to develop the Everglades Regulatory Program (Chapter 40E-63, F.A.C).

In brief, the methodology compares the current year's measured phosphorus load in runoff attributable to the EAA farms, cities, and industry with BMPs in place, with a statistical prediction of what the phosphorus load would have been without the BMPs in place if the annual rainfall amount and monthly distribution measured for the *current* year had occurred during the pre-BMP period. The statistical prediction equation (r^2=0.91) was developed using the EAA measured loads and measured rainfall during a 10-year pre-BMP period. Each annual phosphorus percentage reduction is computed by comparing the *current* year's load with what the *predicted* average annual load of what the base period would have been had the *current* year's rainfall pattern occurred during the pre-BMP base period.

WATER YEAR 1998, EAA PHOSPHORUS MEASUREMENTS AND CALCULATIONS

LOAD:

ACTUAL WY98 EAA PHOSPHORUS MEASUREMENTS (WITH BMPS)	161 TONS
ESTIMATED WY98 PHOSPHORUS LOAD FROM THE EAA WITHOUT BMPS	244 TONS
WY98 PHOSPHORUS REDUCTION (RELATIVE DIFFERENCE)	34%
THREE YEAR TREND PHOSPHORUS REDUCTION WITH BMPS	55%

CONCENTRATION:

ACTUAL WY98 EAA PHOSPHORUS CONCENTRATION (WITH BMPS)	102 PPB
THREE YEAR TREND PHOSPHORUS CONCENTRATION WITH BMPS	100 PPB
AVERAGE PRE-BMP PERIOD (1979-1988) CONCENTRATION (W/O BMPS)	173 PPB

The trend of phosphorus load reduction represents a decrease of phosphorus from the combined surface water runoff attributable to the EAA farms, cities, and industry. **The calculation does not equate to a 55% reduction of the total phosphorus in surface water entering the Water Conservation Areas from the SFWMD operated pump stations and water control structures located at the EAA southern boundary.** The sum total of phosphorus entering the Water Conservation Areas through the SFWMD operated pumps and gates within the EAA originates from the combination of EAA surface water runoff, Lake Okeechobee releases (environmental, urban water supply, and regulatory), C-139 Basin surface water runoff, and stormwater treatment area discharges. The Water Conservation Area phosphorus inputs are as follows:

WATER YEAR 1998, PHOSPHORUS MEASUREMENTS TO WATER CONSERVATION AREAS FROM ALL SFWMD OPERATED STRUCTURES

209 TONS OF PHOSPHORUS WITH A COMBINED CONCENTRATION OF 109 PPB

- 144 tons directly from the EAA farms, cities, & industry
- 31 tons from C-139 Basin (of which 6 tons were passed through the EAA)
- 15 tons from Lake Okeechobee, passed through the EAA (environmental, urban water supply, and regulatory releases)
- 7.0 tons from L-28 Basin (pump station S-140)
- 7.0 tons from Feeder Canal Basin (structure S-190)
- 5.3 tons from C-11 West Basin (pump station S-9)
- 2.6 tons from STAs (outflow)

In addition to the Everglades BMP regulatory program, eighteen (18) research, implementation, and education BMP programs to reduce the discharge of phosphorus from the EAA have been underway since 1985. Of these programs, twelve (12) research activities have been the result of several partnerships between private sectors and public agencies (local, state, and federal). Four (4) of the research programs are currently on-going and are anticipated to continue through 2001 thus providing additional information to improve BMP implementation. Funding for these research partnerships have been provided by at least ten private and public entities totaling over $8 million since 1985.

Water Year 1998 represents the third *full* water year of required best management practices (BMP) implementation throughout the EAA. As the number of annual calculations increase, the staff will be able to have increased confidence to quantify a specific level of long-term phosphorus reduction in the runoff attributable to BMPs. However, given the encouraging preliminary BMP program measurements and the performance of the initial SFWMD stormwater treatment areas (the ENR Project and STA-6), **there is increased confidence that the Everglades Forever Act's interim goal of achieving 50 ppb phosphorus concentration through the combination of existing landowner BMPs and downstream stormwater treatment areas will be met.**

TABLE OF CONTENTS

LIST OF FIGURES

(List of Figures continued)

LIST OF TABLES